SUBJECT INDEX

Acceleration potential 130, 140
Actinide distribution 9
Adsorption reactions 12–14
Advection–diffusion equation 67
Advective flow 70–2
Aghulas Current 84, 157, 234
Alaskan pollack larvae 79–80
Amazon River discharge 27, 30
Anchoveta feeding 74–5, 77
Angola Basin 151
  deep flow 219
  surface flow 156
Antarctic Circumpolar Current 88, 167, 191–3
Argentine Basin 151, 156, 237
Armorican Shelf and Slope
  residual current records 304–11
    summary 332–7
  shelf records discussed 315–21
  slope records discussed 321–8
  wind driven responses 311–15
Atlantic Ocean *see* South Atlantic circulation study; US shelf/coast exchange studies

Benguela Current 84, 156
Bering Sea 78
Biogenic flux and coast/shelf exchange
  coastal water classification 66–7
  shelf 72–3, 77–80
  shelf/ocean 80, 84
    eddies 88–9
    rings 84–8
  shore/shelf
    non-tidal 70–2
    tidal 68–70
  upwelling
    coastal 73–7
    shelfbreak 81–3
Biomass measures 31
Biscay, Bay of 334, 335
Boundary currents 84
Brazil Basin 151
  deep flow 219
  surface flow 156
Brazil Current 211, 232

C-14, South Atlantic 210, 215
California Current 84
Cape Basin 151, 199
Cape Rise 151
Carbon budget
  biological cycling 89–92
  Gulf of Mexico 255, 277
  modelling *see* Modelling, biological flux exchange
  Orinoco River plume 50–2
Caribbean Sea
  Ekman transport 47
  particle distribution 28–30
    methods of study 30–40
    results 40–8
  physical setting 25–8
Carpentaria, Gulf of 69
Celtic Shelf and Slope
  residual current records 304–11
    summary 332–7
  shelf records discussed 315–21
  slope records discussed 321–8
  wind driven responses 311–15
Chlorophyll concentration
  Caribbean Sea
    methods 30–40
    results 40–8
  Gulf of Mexico 274, 275, 281, 293, 296
Coastal Ocean Dynamics Experiment (CODE) 72
Coastal Upwelling Ecosystems Analysis (CUEA) 72
Coastal waters
  classification 66
  exchange processes 66–7
    non-tidal 70–2
    tidal 68–70
  upwelling 73–7
Coastal Zone Color Scanner (CZCS)
  Caribbean Sea
    methods of imaging 30–40
    results 40–8
  Gulf of Mexico 269
Coccolithophores 39
Cold-Core Rings Program 88
Corpus Christi Bay 71
Current patterns
  Caribbean Sea 27
  Southern Ocean 88
Current vectors, W Pacific 131, 141

Denitrification rates 256
Dissolved nutrients *see* Nitrate; Phosphate
Dissolved organic carbon (DOC) 93
Dissolved organic nitrogen (DON) 93
Distribution coefficients, metal ion 8, 9–10
Drake Passage 88, 168, 219, 237

East Australian Current 84
Eddies
  Gulf Stream 84–8
  mid-ocean 88–9
Ekman transport 47, 71, 235–6
Estuaries
  circulation 69

exchange studies
non-tidal 70–2
tidal 68–70
European Basin, slope current studies 329–32
Exchange processes and biogenic flux
coastal water classification 66–7
shelf 72–3, 77–80
shelf/ocean 80, 84
eddies 88–9
rings 84–8
shore/shelf
non-tidal 70–2
tidal 68–70
upwelling
coastal 73–7
shelfbreak 81–3

Falkland Current 167, 211, 232
Falkland Plateau 151
Fish larvae survival 77, 87
Florida Coast upwelling studies 81
Florida Strait
nitrate distribution 248–50
nitrate flux 251
Flux defined 67–8

Geopotential anomaly, South Atlantic 158, 203, 204
Georgia Bight Experiment (GABEX) 73, 81
Geostrophic speed 172, 177, 181, 183, 186
Global Ocean Flux Study (GOFS) 89
Gulf Stream 66, 67, 81–3
rings 84–8, 90

Hardangerfjord 71
He-3, South Atlantic 210, 215
Hudson River 69
Hunter Channel 234

International Southern Ocean Studies (ISOS) 88
Intertropical Convergence, Caribbean 25–7
Islas Oradas Rise 151

Joint Global Ocean Flux Study (JGOFS) 92
Juan de Fuca canyon 71

Kuroshio Current 84

Loop Current 81, 251, 253
mathematical modelling
methods 256–9
results 269–73

Magdalena River discharge 27
Mathematical modelling *see* Modelling
Metal ion scavenging
adsorption kinetics 12–14
concentration effects 14–15
mathematical modelling
applications 5–12
development 3–5
predictions 15–18
research summary 1–2
Mexico, Gulf of
CZCS imaging 269
flow patterns 248–51
nitrogen budget estimates 291, 292
nitrogen flux
dissolved matter 251–4
particulate matter 254–6
total 245–8
Microbial Exchanges and Coupling in Coastal Atlantic Systems (MECCAS) 68
Mid Atlantic Ridge 151
Mississippi River 254
Modelling
biological flux exchange 67–8
shelf 72–3, 77–80
shelf/ocean 80, 84
eddies 88–9
rings 84–8
shore/shelf
non-tidal 70–2
tidal 68–70
upwelling
coastal 73–7
shelfbreak 81–3
Gulf of Mexico
methods
biochemical mixing 262–6
circulation 256–9
vertical mixing 259–61
numerical solutions 266–8
results
biological 273–8
biophysical 278–90
circulation 269–73
Loop Current
methods 256–9
results 269–73
metal ion scavenging
applications 5–12
development 3–5
predictions 15–18
Orinoco River plume 50–2

Narraganset Bay 69, 71
New Guinea Coastal Current 123, 133, 142–5
New York Bight
organic carbon circulation 90
salinity profiles 85
temperature profiles 85
Nitrate profiles
S Atlantic 180
W Pacific 129, 139
Nitrogen budget
Gulf of Mexico
dissolved matter 251–4
mathematical modelling 279, 280, 282, 284
particulate matter 254–6

total flux 245–8
Orinoco River plume 50–2
US Shelf 91
North Atlantic Deep Water 169, 198–218
Nutrient profiles *see* Nitrate; Phosphate

Oregan Coast upwelling studies 75
Organic carbon *see* Carbon budget
Organization of Persistent Upwelling Structures (OPUS) 72
Orinoco River
discharge 27
nutrient dynamics 48–50, 56–8
Oscillatoria and CZCS 39
Oxygen levels
S Atlantic 157, 192, 199, 223
horizontal variations 160, 165, 189, 195, 201, 213, 217, 221, 225, 230
vertical variations 171, 175, 179, 182, 185
W Pacific 110, 114, 117–18, 119, 126, 136

Pacific Equatorial Undercurrent
acceleration potential 130, 140
current vectors 131, 141
dissolved nitrate profiles 129, 139
dissolved oxygen profiles 110, 114, 117–19, 126, 136
dissolved phosphate profiles 127, 137
dissolved silica profiles 111, 115, 128, 138
salinity profiles 109, 112, 116, 118, 124, 125, 135
setting 102–3
specific volume anomalies 108, 112, 117
tritium profiles 116, 117
WEPOCS 103–7
Peru Coast upwelling 74–5
Phaeopigment measures 41
Phosphate levels
S Atlantic 157, 192, 199
horizontal variations 161, 165, 189, 195, 201, 213, 221, 230
vertical variation 175, 179, 185
W Pacific 127, 137
Phytoplankton
anchoveta feeding 74–5
coastal upwelling 76
distribution studies
Caribbean Sea 28–30
CZCS imaging
methods 30–40
results 40–8
estuarine circulation 69
nitrogen flux 91
Plankton distribution studies
Caribbean Sea 28–30
CZCS imaging
methods 30–40
results 40–8
coastal upwelling 76
Potential density
horizontal variation 160, 218, 231
vertical variation 172, 176, 181, 182, 186
Potential temperature
horizontal variation 229
vertical variation 170, 174, 178, 182, 184
Potomac River 71
Primary productivity 31
Processes and Resources of the Bering Sea Shelf (PROBES) 73, 78–9
Providence River 71

Quantitative scavenging index (Q) 6

Residual current shelf/slope studies
records 304–11
summary 332–7
shelf records discussed 315–21
slope records discussed 321–8
wind driven responses 311–15
Rings
classification
cold-core 84
warm-core 84, 90
effect on fish 87
role in ocean basins 88–9
Rio Grande Rise 151, 157, 237

Salinity levels
Gulf of Mexico 251
New York Bight 85
S Atlantic 198, 199, 223
horizontal variations 159, 164, 188, 194, 200, 212, 216, 220, 224, 227
vertical variations 170, 174, 178, 182, 184
W Pacific 109, 113, 116, 118, 124, 125, 135
Sargasso Sea
CZCS imaging
methods 32
results 42, 43
warm-core rings study 87–8
Scavenging mechanisms
adsorption kinetics 12–14
concentration effects 14–15
mathematical modelling
applications 5–12
development 3–5
predictions 15–18
research summary 1–2
Scotia Sea 151
Sedimentation rates 255
Shelf Edge Exchange Processes (SEEP) program 90
Shelf waters
classification 66
exchange processes
shelf/ocean 80–9
shore/shelf 68–72
upwelling 73–7, 81–3
Shrimp larvae transport 69–70
Silica levels
S Atlantic 157, 193, 226
horizontal 161, 166, 190, 196, 214, 222, 231
vertical 171, 176, 180

W Pacific 111, 115, 128, 138
Slope currents
dynamics 327–8
European Basin experiment 329–32
South Atlantic Ocean circulation study
Aghulas Extension 234
Falklands–Brazil Confluence 232–4
flow records
circumpolar water 191–7, 219–22
deep water 198–218
intermediate water 187–90
near surface 156–67
Weddell Sea 223–31
layering 169–86
problems of measurement 153–5
setting 150–2
sources of flows 167–8
summary 236–8
total transport 235–6
South Sandwich Trench 151
Southern Ocean 88
Specific volume anomaly 108, 112, 117
Spring Removal Experiment (SPREX) 68
Steric height, S Atlantic 163, 166, 167, 190, 196, 197, 202–3, 205–6
Sunglint problems in CZCS 39

Temperature profiles
New York Bight 85
S Atlantic 159, 198
Tidal exchange 68–70
Tritium profiles, W Pacific 116, 117
Tropical Water, Pacific 102–3
Turbidity problems in CZCS 39

Upwelling studies
coastal 73–7
shelfbreak 81–3
Urophycis tenuis 87

US shelf/coast exchange studies
coastal water classification 66–7
shelf 72–3, 77–80
shelf/ocean 80, 84
eddies 88–9
rings 84–8
shore/shelf
non-tidal 70–2
tidal 68–70
upwelling
coastal 73–7
shelfbreak 81–3

Vema Channel 234

Walvis Ridge 151
Warm Core Rings Experiment (WCRE) 87
Weddell Sea 151
currents 168
densities 173
isopycnal data 154
water characters
lower 226–31, 237
upper 223–5
Western Equatorial Pacific Ocean Circulation Study (WEPOCS) 103–7
Wind stresses 47, 260
World Ocean Circulation Experiment (WOCE) 92

Yucatan Current 251
Yucatan Strait
nitrate distribution 248–50
nitrate flux 251

Zooplankton 30, 31
migration modelling 70